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EXAMINER	
WU, QING YUAN	

ART UNIT	PAPER NUMBER
2194	

DATE MAILED: 12/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/884,009	HSIEH, BOR-MING	
	Examiner	Art Unit	
	Qing-Yuan Wu	2194	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 September 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,8-11,13-21 and 23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6, 8-11, 13-21, and 23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-6, 8-11, 13-21 and 23 are pending in the application.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. The following terms lacks antecedent basis:

i. The computing device- claim 9.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-6, 8-11, 13-21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Young (U.S. Patent 6,609,161) in view of Applicant Admitted Prior Art (hereafter AAPA) (U.S. PG Pub 2002/0194249).

6. Young was cited in the last office action.

7. As to claim 23, Young teaches the invention substantially as claimed including managing a queue with a queue data structure, the queue data structure comprising [abstract, line 1]:

a first dimension data field comprising a first plurality of command blocks sorted with respect to command block priority [col. 2, lines 25-29; col. 3, lines 13-18; abstract; 275, Fig. 3B]; and

a second dimension data field comprising a second plurality of command blocks sorted based on command block priority, the second plurality of command blocks comprising a root thread and one or more other threads; and

executing respective ones of the command blocks in view of command block priority [col. 2, lines 30-35; SCBs 34, 167, 05, 270A-272A, Fig. 3B; col. 8, lines 30-49].

8. Young does not specifically teach a run queue or threads. However, AAPA teaches storing threads in a run queue for subsequent execution [AAPA, pg. 1, col. 2, lines 33-49].

9. It would have been obvious to one of an ordinary skill in the art at the time the invention was made, to have modified the teaching of Young with the teaching of AAPA to extend the functionality of Young's multi-dimensional queue and to applied it to the scheduling of different tasks.

10. As to claim 1, this claim is rejected for the same reason as claim 23 above. In addition, Young as modified teaches the invention substantially as claimed including, associating a second plurality of threads that is priority sorted with the run queue in a manner that maintains a priority based scheduling semantic of the run queue [col. 3, lines 13-18; col. 6, lines 1-24; col. 7, lines 47-55; col. 8, lines 30-36; 270A, Fig. 3C].

11. Young as modified does no specifically teach in a deterministic amount of time equivalent to an amount of time to insert a single thread into the run queue. However, Young disclosed appending the target queue with SCSI control blocks (hereafter SCBs) remaining to be transmitted to the end of the common queue [col. 7, lines 36-55].

12. It would have been obvious to one of an ordinary skill in the art at the time the invention was made, to have recognized that the time required to associate/insert the plurality of threads in the run queue/common queue is equivalent to inserting a single thread in the run queue because only a single thread is being inserted (i.e. changes in common tail pointer).

13. As to claim 2, Young as modified teaches the invention substantially as claimed including wherein the second plurality of threads comprises a root thread, and wherein associating the second plurality of threads with the run queue further comprises inserting only the root thread into the run queue to represent the second plurality of nodes [col. 2, lines 33-35, 43-47; col. 3, lines 13-18].

14. As to claim 3, Young as modified does not specifically teach and inserting each thread in the second plurality of threads into the run queue independent of any additional other queue access. However, Young disclosed inserting SCBs from target queues into common queue [col. 7, lines 36-55]. It would have been obvious to one of an ordinary skill in the art at the time the invention was made, to have recognized that no other queues are being access when a preceding thread is inserted in to the run queue.

15. As to claim 4, this claim is rejected for the same reason as claim 2 above.

16. As to claim 5, this claim is rejected for the same reason as claim 2 above. In addition, Young as modified teaches the invention substantially as claimed including removing the root thread from the run queue; and responsive to removing the root thread, inserting a next thread of the second plurality of threads into the run queue such that the priority based scheduling semantic of the run queue is preserved [col. 7, lines 36-55; Figs. 3B-3C].

17. As to claim 6, this claim is rejected for the same reason as claims 3 and 5 above.

18. As to claim 8, Young as modified teaches substantially the method for managing a run queue. Therefore, Young as modified teaches substantially the system for implementing the method.

19. As to claim 9, this claim is rejected for the same reason as claim 3 above.

20. As to claim 10, this claim is rejected for the same reason as claim 1 above.

21. As to claim 11, this claim is rejected for the same reason as claim 2 above.

22. As to claim 13, this claim is rejected for the same reason as claim 23 above. In addition, Young as modified teaches the run queue being implemented in a linked list data structure [col. 2, lines 25-49; AAPA, paragraph 5, lines 1-4 and Fig. 1].

23. As to claims 14-15, these claims are rejected for the same reason as claims 5-6 above.

24. As to claims 16, Young as modified teaches substantially the method for managing a run queue. Therefore, Young as modified teaches substantially the computer-program instructions for implementing the method.

25. As to claim 17, this claim is rejected for the same reason as claim 2 above.

26. As to claim 18, this claim is rejected for the same reason as claim 13 above.

27. As to claim 19, this claim is rejected for the same reason as claim 5 above.

28. As to claim 20, this claim is rejected for the same reason as claim 3 above.

29. As to claim 21, this claim is rejected for the same reason as claim 6 above.

Response to Arguments

30. Applicant's arguments filed 9/28/06 have been fully considered but they are not persuasive.

31. In the remarks, Applicant argued in substance that:

a. Young cannot be properly combined with AAPA, because the features of each reference would destroy the basis on which the other reference is based.

1) Young's SCSI command blocks are not sorted with respect to priority.

2) AAPA teaches that threads are inserted/removed from the queue based on thread priority (and that young doesn't).

32. Examiner respectfully traversed Applicant's remarks:

33. As to point (a), as argued by applicant in the current remark and as cited by the examiner in the Office Action dated 6/28/06, Young's SCSI command blocks are appended to queues on a first-in first-out basis (hereafter FIFO) [remark, pg. 14, lines 2-5], which means the command

blocks are sorted with respect to the FIFO priority scheme, in which tasks that are added first with respect to other tasks (i.e. highest priority) to a queue gets removed/executed first, and vice versa [col. 2, lines 9-11; col. 3, lines 13-18; col. 8, lines 30-36 and 56-60]. The order of arrival/addition/insertion of the command blocks determines their priorities, therefore the sorting of the command blocks in the queues are based on these priorities, and so does the removal/execution of these command blocks. In addition, applicant failed to explain why it wouldn't have been obvious to one of an ordinary skill in the art at the time the invention was made, to have modified the teaching of Young with the teaching of AAPA to extend the functionality of Young's multi-dimensional queue and applied it to the scheduling of different tasks (such as threads). Therefore, applicant's arguments are not persuasive.

34. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

35. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qing-Yuan Wu whose telephone number is (571) 272-3776. The examiner can normally be reached on 8:30am-6:00pm Monday-Thursday and alternate Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Thomson can be reached on (571) 272-3718. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Qing-Yuan Wu

Examiner

Art Unit 2194

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